

In the ***Oath/Declaration*** section of the Detailed Action, the originally filed oath or declaration was alleged to be defective because it did not provide the residence of the inventor. However, it will be appreciated that the signed declaration contains the phrase "if different from PO address" in the residence address line. This phrase indicates that if no address is provided adjacent thereto, the residence address is the same as the PO address. The use of this phrase for this purpose has been routinely recognized as sufficient for this purpose by the PTO new applications branch (and examiners) for over 20 years (that the undersigned is definitely aware of); and is undoubtedly the reason that the PTO new applications branch passed this application to the examiner for examination without requiring a new declaration or any residence information, as the PTO new applications branch would otherwise do if the declaration were deficient in this regard. This acceptance of such declarations by the PTO new applications branch can be confirmed by a call thereto, or presumably by reference to the inventor information contained in the PTO data base which should reflect the PTO new applications branch entering the residence information of the inventor into the PTO electronic data system. Therefore, in view of the above, it is submitted that the signed declaration is not defective and an indication of the acceptance of the signed declaration is requested in the next action.

In the ***Specification*** section of the Detailed Action, the examiner stated that this application does not contain an abstract as required by 37 CFR 1.72(b), so that the examiner then required an abstract on a separate page. However, this requirement in a national stage (371) application is "improper" (see MPEP § 1893.03(e)) since the PCT published application contained an abstract on a separate page.

Also in the **Specification** section, the examiner noted the guidelines "suggested" for use. It will be noted that the layout of the specification does follow these guidelines, though none of the "suggested" headings have been provided. However, as such headings are merely suggested, no revisions to the specification have been made.

In the **Claims Objections** section, claims 11 and 25-27 were objected to under 37 CFR 1.75(c) as being of improper dependent form for failing to further limit the subject matter of a previous claim. This objection was based on the examiner's assertion that the light converging optical element can only be a lens, so that claiming the optical element as a lens was not further limiting. However, as is well known in this art, the trajectory of a beam of light can be altered by means of various optical elements, including lenses, prisms, diffraction plates and mirrors. Such deflection does not necessarily, of course, constitute "convergence" but when two such elements are employed convergence can be effected. For example, two planar prisms oriented to be "base in" will converge light, even though neither optical element is a lens. Thus, it is submitted that the light converging means need not comprise two lenses, and that accordingly dependent claims 11, 25, and 27 (note, claim 26 has been canceled) are further limiting and the objection thereto should be withdrawn.

Also in the **Claims Objections** section, various claims were objected to due to the minor informalities noted. By this Amendment, the claims have been suitably amended to overcome the noted informalities as well as others of a similar nature which were observed.

In the **Claims Rejections -35 USC § 112** section, claims 1-4 were rejected for being indefinite due to the use of the term "worn", as it was unclear to the examiner

whether the wearing of the apparatus was intended by this term to be a claim limitation. By this Amendment, the term "worn" has been replaced with "used", so that it is clear that being worn by the user is not a claim limitation. It will also be appreciated that the clause objected to is merely a statement of the intended utility intended to inform the reader of the desired effect to be achieved by the invention in use, which is obviously not a limitation in an apparatus claim.

Also in the ***Claims Rejections -35 USC § 112*** section, claims 8-9 were rejected due to the use of the phrase "includes or is additionally". This phrase was used in order to claim that the color filter could be either a tinting of one of the lenses or a separate filter. However, in view of this rejection, the noted phrase has been changed to just "includes", as this term would encompass both embodiments (but perhaps less pointedly so to one not schooled in patent claim interpretation). It will be noted that a similar change has also been made in claims 45-46.

In view of all of the above, it is submitted that claims 1-4 and 8-9 are now all definite so that the rejection under § 112 should now be withdrawn.

In the ***Duplicate Claims*** section, claim 18 and 36 were alleged to be duplicative. By this Amendment, claim 36 has been canceled, and it will be noted that claim 18 is now dependent on independent claim 3 rather than independent claim 1.

In the ***Claims Rejection – 35 USC § 102 and § 103*** sections, claims 1-7, 10-31, 34-44 and 47 were rejected as being anticipated by or obvious over Shapiro. However, for the following reasons, it is submitted that independent claims 3, 20 and 37 (the only original independent claims remaining after the present amendment) and the claims dependent therefrom are all allowable over this reference.

It will be noted that independent claims 3, 20 and 37 have all been amended to claim that the optical elements are "approximately 0.5 base-in" prisms or lenses. As noted below, this feature, formerly found in dependent claim 16 (now canceled), is particularly advantageous in the present invention and is inventive.

Shapiro discloses eyeglasses for use with a video display terminal, the eyeglasses providing at least diopter of base in prism dioptic correction (cf. the abstract, column 3 lines 19 and 20, and column 4 lines 37 and 38 of Shapiro). This amount of base in prism dioptic correction can be understood by reference to Shapiro's disclosure, which teaches eyeglasses in combination with a video display terminal. The typical viewing distance of a video display terminal (as shown, for example, in figure 1A of Shapiro) dictates this level of convergence relief. In applications where the viewing distance is greater, such relief is not required both because the convergence demand is lesser and because that demand is not as protracted as when using the VDU of a personal computer or the like. It is therefore understandable that Shapiro so unambiguously teaches the use of "at least one diopter of base-in prism dioptic correction".

However, the present applicant has made the surprising discovery that, although one diopter is indeed—based on a geometric analysis—the required amount of convergence relief in common situations, a number of experimental subjects preferred less convergence relief than that indicated by such an analysis. This appears to stem from the high peripheral distortion associated with full convergence relief, though the full explanation remains unclear. Thus, the present applicant proposes, as was defined in original claim 16 (now canceled), what amounts to an under-correction - as the use of

0.5 diopter base-in prisms was found to reduce fixation disparity to a manageable level and to contribute to visual comfort, without introducing too great a degree of peripheral distortion.

Further, as mentioned above, a 0.5 diopter correction is not one that would be arrived at by geometric analysis in other situations with a greater viewing distance, because such situations do not entail the very close *and* protracted viewing associated with VDU use.

It is thus clear from the disclosure of Shapiro that this issue has not been appreciated or in any way addressed, and there is clearly no disclosure of this feature or its benefits. Therefore, it is submitted that the present invention as defined in amended independent claims 3, 20 and 37 is novel and non-obvious over the disclosure of Shapiro. For these same reasons, it is submitted that the claims dependent from these independent claims are similarly allowable.

In the Action, dependent claims 8, 9, 32, 33, 45 and 46 were also rejected under § 103 as been unpatentable over Shapiro in view of Beard. It will also be noted that new independent claims 48 and 50 and respective new dependent claims 49 and 51 claim similar subject matter. For the following reasons, it is submitted that all of these claims are allowable over this combination of references.

The Examiner is referred to the above comments concerning the disclosure of Shapiro. Concerning Beard, this document teaches the use of optical filters, comprising a color filter to provide differential blue/yellow transmissivity in a pair of 3-D spectacles. However, Beard's invention is based on the understanding that television pictures have three peak radiant energy wave bands so that a 3-D effect can be achieved by adjusting

a viewer's apparent sensitivity to at least one of those wave bands. This approach for providing a 3-D effect (i.e., using differential transmissivity) is well known in principal, and is comparable to that used for at least 40 years in cinema applications. Beard has translated that approach to television by recognizing that a television picture comprises three peak wave bands. In particular, Beard observes that "the human eye is typically about six times less sensitive to blue than to green or yellow" (column 7 lines 38 and 39), and therefore proposes that the dark lens have a substantially lower optical density "in the blue region than in the green or yellow regions" (column 7 lines 29 and 30).

In view of all of the above, it is submitted that the teachings of these two prior art documents in no way address the efficacy of color filters in the provision of convergence relief. Shapiro, in the passage referred to by the Examiner (column 5 lines 57 to 58), merely refers to the use of "ultraviolet and infrared filtering". Such filters, however, effect non-visible light and so have no effect on what a viewer actually perceives or, therefore, on convergence demand.

For this reason, the original dependent claims as well as new claims 48-51 refer to "*color* filters", as such filters do effect what is seen by the user. Ultraviolet and infrared radiation are invisible and therefore do not fall within the scope of the new claims; hence the teaching of Shapiro in this regard in no way anticipates the present invention.

The teaching of Beard similarly has no relevance to the present invention as well. The utility of a filter for the purpose of providing an optimal and comfortable 3-D effect provides no teaching of value to the person investigating the relief of convergence demand. Further, Beard's teaching concerns the preferred relative transmissivity of light

in the blue region to light in the "green-yellow region", so that this teaching concerns relative - not absolute - transmissivities in providing a 3-D effect. Beard's teaching also does not provide useful instruction to the person addressing the problem of convergence demand, or the merit - in this or any other context - of employing a particular filter. The choice of colors in Beard, it must be recalled, is dictated by the characteristics of televisions, and there is no suggestion in Beard that such a choice of filters would provide any benefit in any other application.

Further, Beard does not teach that yellow filters (cf. new claims 49 and 51 of the present application) have any special merit. Beard merely observes that, because blue, yellow and green are the three peak radiant energy wave bands, and that the human eye has a different sensitivity to blue light than to light in the "green-yellow region", filter transmissivity should be chosen accordingly. Light in the "green-yellow region" is not, however, differentiated into green, yellow or otherwise, so there is no teaching that yellow itself has any special characteristic that could be said to pre-empt or suggest the present invention as claimed in new claims 49 and 51. Again, the significance the eye's different sensitivity to blue compared to yellow-green is limited in the teaching of Beard to improving "the overall 3-D effect and for viewer comfort" (column 7 lines 30 and 31).

In addition, the skilled person would not combine the teaching of Shapiro and Beard as suggested by the Examiner. The filters of Shapiro are chosen because infrared and ultraviolet can damage the eyes; the filters of Beard are chosen because of the colors that make up a television picture, and their transmissivities are adjusted to optimize the overall 3-D effect and for viewer comfort. There is no reason to suppose that any useful combination could be formed from these disparate teachings; or that, if

such a combination were formed, it would suggest the use of color filters (and in particular yellow filters) in the provision of convergence relief.


Thus, Shapiro and Beard each teach the use of various specific filters for various specific reasons, neither of which may really be translated to the claimed filter of the present invention. Consequently, it is submitted that new claims 48-51 are patentable over the cited prior art documents, whether taken alone or in combination, and that dependent claims 8, 9, 32, 33, 45 and 46 are additionally allowable for this reason.

The remaining references which were cited but not applied have been reviewed but are not believed to be pertinent to the patentability of the present invention.

For all of the foregoing reasons, it is submitted that the present application is in condition for allowance and such action is solicited.

Respectfully submitted,

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ATTACHMENT Amendments to the Claims

Following herewith is a complete listing of the claims, including a marked copy of the currently amended claims.

1.-2. (canceled)

3. (currently amended) An apparatus for avoiding ocular muscular fatigue comprising a binocular light converging means comprising two optical elements for converging incident light, thereby reducing ocular convergence demand when said apparatus is worn-used by a user, wherein said optical elements are 0.2 to 10 approximately 0.5 base-in lenses prisms.

4. (canceled)

5. (currently amended) An apparatus as claimed in claim 43, wherein said binocular light converging means is integral.

6. (currently amended) An apparatus as claimed in claim 43, wherein said binocular light converging means is of polycarbonate, acrylic or some other polymeric plastic material.

7. (currently amended) An apparatus as claimed in claim 43, wherein said binocular light converging means is a magnifying binocular light converging means.

8. (currently amended) An apparatus as claimed in claim 43, wherein said binocular light converging means includes ~~or is additionally at least one~~ colour filter.

9. (currently amended) An apparatus as claimed in claim 43, wherein said binocular light converging means includes ~~or is additionally at least one~~ colour filter, and said at ~~least one~~ colour filter reduces the intensity of transmitted yellow light.


10. (currently amended) An apparatus as claimed in claim 43, ~~wherein said apparatus includes~~ further including an adjustment means whereby ~~the~~ a separation of the two optical elements can be adjusted according to a pupil separation of ~~a~~ the user.

11. (currently amended) An apparatus as claimed in claim 43, wherein said light converging means comprises two lenses.

12. (canceled)

13. (currently amended) An apparatus as claimed in claim 23, wherein each of said optical elements comprises a spherical optical wedge ~~with a base, and said bases of said lenses are adjacent thereby forming base-in prisms.~~

• B, 14.-16. (canceled)

 17. (currently amended) An apparatus as claimed in claim 43, wherein said optical elements are additionally prescription lenses.

18. (currently amended) An apparatus as claimed in claim 43, wherein said optical elements are lenses provided as a pair of spectacles.

19. (canceled)

20. (currently amended) A method for reducing ocular muscular fatigue due to convergence demand comprising converging light prior to said light's incidence on a user's eyes by ~~means of~~ a pair of optical elements, wherein each of said optical elements comprises an optical wedge with a base, wherein said bases of said optical elements are adjacent thereby forming base-in prisms, and wherein said ~~lenses-prisms~~ are 0.2 to 10 approximately 0.5 base-in lensesprisms.

21.-22. (canceled)

23. (currently amended) A method as claimed in claim ~~49~~20, wherein said optical elements are integral with each other.

24. (currently amended) A method as claimed in claim ~~49~~20, wherein said optical elements are magnifying optical elements.

25. (currently amended) A method as claimed in claim ~~49~~20, wherein said optical elements are a pair of lenses.

26. (canceled)

27. (currently amended) A method as claimed in claim ~~49~~20, wherein said optical elements are a pair of lenses each of which comprises a spherical optical wedge ~~with a base, wherein said bases of said lenses are adjacent thereby forming a pair of prisms.~~

28.-30. (canceled)

31. (currently amended) A method as claimed in claim ~~49~~20, wherein said optical elements are additionally prescription lenses.

32. (currently amended) A method as claimed in claim ~~49~~20, wherein said optical elements ~~are~~ are additionally colour filters.

33. (currently amended) A method as claimed in claim ~~49~~20, wherein said optical elements are additionally colour filters that reduce the intensity of transmitted yellow light.

34. (currently amended) A method as claimed in claim ~~49~~20, wherein the method includes adjusting ~~the~~a separation of the optical elements according to a pupil separation of a user.

35. (currently amended) A method as claimed in claim ~~49~~20, including providing said optical elements as a pair of spectacles.

36. (canceled)

37. (currently amended) A pair of spectacles for avoiding ocular muscular fatigue comprising a pair of convergent lenses for converging incident light, thereby reducing ocular convergence demand when said spectacles are worn by a user, wherein said lenses are ~~0.2 to 10~~ approximately 0.5 base-in lenses.

38.-41. (canceled)

42. (currently amended) A pair of spectacles as claimed in claim ~~36~~37, wherein said lenses are integral with each other.

43. (currently amended) A pair of spectacles as claimed in claim ~~36~~37, wherein said lenses are magnifying lenses.

44. (currently amended) A pair of spectacles as claimed in claim ~~36~~37, wherein said spectacles are additionally prescription spectacles.

45. currently (amended) A pair of spectacles as claimed in claim ~~36~~37, wherein said spectacles include, ~~or said lenses additionally comprise, one or more~~ a colour filters.

46. (currently amended) A pair of spectacles as claimed in claim ~~36~~37, wherein said spectacles include, ~~or said lenses additionally comprise, one or more~~ a colour filters, and said ~~one or more~~ colour filters reduces the intensity of transmitted yellow light.

47. (currently amended) A pair of spectacles as claimed in claim 3637, wherein the spectacles are provided with adjustment means whereby a separation of the lenses, ~~separation~~ can be adjusted according to a pupil separation of a ~~the~~ user.

48. (new) A method for reducing ocular muscular fatigue due to convergence demand comprising converging light prior to said light incidents on a users eyes by means of a pair of optical elements, wherein said optical elements are additionally color filters.

49. (new) A method as claimed in claim 48, wherein said color filters reduce the intensity of transmitted yellow light.

50. (new) A pair of spectacles for avoiding ocular muscular fatigue comprising a pair of convergent lenses for converging incident light, thereby reducing ocular convergence demand when said spectacles are worn by a user, and wherein said spectacles include one or more color filters.

51. (new) A pair of spectacles as claimed in claim 50, wherein said one or more color filters reduce the intensity of transmitted yellow light.
